Description of three new species of Pericopina from the Neotropics

(Lepidoptera Erebidae Arctiinae Arctiini)

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< https://zoobank.org/References/8192F3F5-8C44-4DE5-8C1C-7DBA1A4155D3 >

Abstract

A new species of the genus *Ctenuchidia* Grote, [1866], from Dominican Republic and two new species of the genus *Crocomela* Kirby, 1892, from Peru are described from male holotypes for which a full description of habitus and genitalia is provided.

Keywords. — Arctiinae – Arctiini – Pericopina – Neotropics – taxonomy – new species – Dominican Republic – Peru.

Résumé

Description de trois nouvelles espèces de Pericopina néotropicaux

Une nouvelle espèce du genre *Ctenuchidia* Grote, [1866], de République Dominicaine et deux espèces nouvelles du genre *Crocomela* Kirby, 1892, du Pérou sont décrites d'après des holotypes mâles dont l'habitus et les genitalia sont figurés.

Mots-clés. — Arctiinae – Arctiini – Pericopina – région néotropicale – taxinomie – nouvelle espèce – République Dominicaine – Pérou.

Abbreviations

CMNH	Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA.
DKC	Personnal collection of Denis Kopp, Cherré-Au, Sarthe, France.
MNHN	Muséum National d'Histoire Naturelle, Paris, France.

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Introduction

Following the invitation and the exemplary welcoming reception of Kevin Keegan, head of the entomological collections of the CMNH, I was able to study the important series of Arctiinae from the Dominican Republic collected during the numerous entomological expeditions organized in this country at the instigation of Professor John Rawlins between the early 1990s and the late 2000s. A specimen of *Ctenuchidia* Grote, [1866], immediately got my attention on account of a particularly large number of white dots on the hindwings. After investigation, it turned out to be new and it is described below. Similarly, following the kind invitation of Denis Kopp, an amateur entomologist with a rich collection of Pericopina, I was able to study the numerous specimens he keeps within this subtribe. I was intrigued by a series of males belonging to two species of *Crocomela* Kirby, 1892, which I was able to associate with a unique specimen from my personal collection that has not been identified until now. Based on this series, whose habitus is constant, and after comparison with other species of the genus, I was able to deduce their unpublished status and propose the description of two additional new species below.

Material and methods

Photographs of the genitalia were taken with an Amscope 10 Mp camera mounted on an Amscope SM-4TPZ trinocular loupe. The images, taken at several focus planes, were assembled using CombineZP to obtain the best focus.

Tissue samples of the specimens analyzed in the present work were processed through DNA barcoding at the Canadian Centre for DNA Barcoding in Guelph (Ontario, Canada), along with many other arctiid species as the target of a DNA barcoding project for neotropical tiger-moths, developed within the Barcode of Life Data Systems – BOLD (Ratnasingham & Hebert, 2007). DNA extraction, PCR amplification and sequencing followed the protocols already described in Vaglia & *al.* (2008). The sequences obtained were analyzed by the maximum likelihood method using MEGA6 software (Tamura & *al.*, 2013).

Systematic

Ctenuchidia keegani n. sp.

< https://zoobank.org/NomenclaturalActs/7BF21DA2-E2F6-450C-B7BB-73600D061F9D >

Holotype. ♂, Dominican Républic, Pedernales, La Abeja, 38 km NNW Cabo Rojo, 18-09N 71-38W [18°09′ N – 71°38′ W], 1 160 m, 1 July 1987, David Matusik *leg.*, sequenced process ID ARCTD1904-24, BOLD ID MILA2623; dissected Gen. BV 607. *In* CMNH.

Paratypes. 2 ♂.

1 ♂, Dominican Republic, Pedernales Province, 12 km N Las Abejas, 1 130 m, 11 July 1986, D. Matusik *leg. In* CMNH.

1 ♂, Dominican Républic, Pedernales Province, 12 km NW Las Abejas, Mesic deciduous forest, 1 130 m, July 7–18 1986, D. Matusik *leg. In* CMNH.

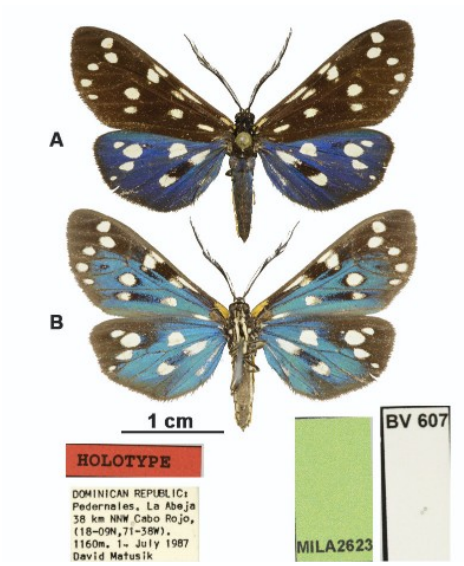

Fig. 1. — *Ctenuchidia keegani* **n. sp.**, habitus, holotype ♂. – **a**, dorsal view. – **b**, ventral view.

Description (fig. 1). Wingspan: 33 mm.

Head. Palpi straight, labial with the first article white and the second and third black, the latter slightly shorter than the first two. Frons shiny brown, devoid of scales except for two small very light-yellow areas on either side of the brown and rolled proboscis. Frontal suture with white scales except for the median area which has brown scales. Vertex brown mixed with iridescent blue scales and white scales which form a punctuation at the level of the scapes. The latter are brown, partly covered by the white scales present on the frontal suture. Collar brown mixed with rare iridescent blue or white scales.

Thorax. Dorsal surface brown with a thin, short, and white median line in the anterior quarter. A few small orange-yellow spots in the central area. Tegulae short, brown, slightly mixed with iridescent blue and marked by small white punctuations in their centre. Ventral surface brown with the exception of the iridescent blue metathorax. It is marked by white punctuations of variable sizes. Brown coxa largely covered with white scales. Brown legs bearing longitudinal white lines.

Forewings. Dorsal surface brown with the following ornamentation: orange-yellow basal spot formed by a punctuation and a short line along the costa; white subbasal band, in the shape of a grain of rice; median band formed by three white spots: two elongated on either side of the subcostal vein and one circular; postmedian band formed by four rounded white spots; irregular submarginal band formed by five spots. Fringe concolourous.

Ventral surface iridescent blue with the exception of the costal edge and the external edge, including the apex, of a brown colour identical to the dorsal surface. The basal spot is formed by a single bright orange line along the costa. The other bands are formed by white spots identical to the dorsal surface.

Hindwings. Dorsal surface iridescent blue with the following ornamentation: white elyptic postbasal band; median band formed by two large semicircular white spots. The spot in the centre of the wing is connected to the elyptic spot of the postbasal band by brown scales that contrast with the fundamental iridescent blueness; submarginal band formed by three white spots of different sizes, the largest being rounded; a small white spot in the median area of the external band. Fringe black.

Ventral face iridescent blue with the same ornamentation as on the dorsal face with the exception of the following characters: small white spot at the insertion of the wing, spots of the post-basal and median bands connected by iridescent blue scales; brown colouration at the level of the post-median spots, the apex and the internal angle.

Abdomen. Dorsal face iridescent blue, slightly darker at the apical end. Laterally orange colouration interrupted by white spots. Ventral face brown highlighted laterally by a thin white line.

Male genitalia (fig. 2). Uncus, in dorsal view, subtriangular with a straight apical half, well sclerotized. In lateral view, it is slightly arched ventrally, tapering to a small point. Tegumen very wide, separated from the uncus by a thin semitransparent membrane. In dorsal view, the anterior margin is straight and the posterior margin concave at the median axis. Valvae straight, simple, without protuberances, reaching the end of the uncus. Vinculum very thin, not fused with the tegumen. It is connected to a very elongated and protruding triangular saccus. Rectangular juxta, very thin, with two short lateral projections. It is fused with a perfectly circular and sclerotized anellus. Tuba analis voluminous with a network of very fine spines at the level of the contact zone with the anellus. Aedeagus very short with a well-rounded caecum penis. Vesica consisting of a simple lobe without cornuti.

Female. Unknown.

Variation. A slight difference in the size of the white spots on the hind and fore wings is observed between the three known specimens.

Distribution. This species is only known from the southern slope of the Sierra de Bahoruco, which once again demonstrates the extraordinary rate of endemism of this mountain range.

Etymology. *Ctenuchidia keegani* **n. sp.** is named in honour of Kevin Keegan, insect collection manager in CMNH.

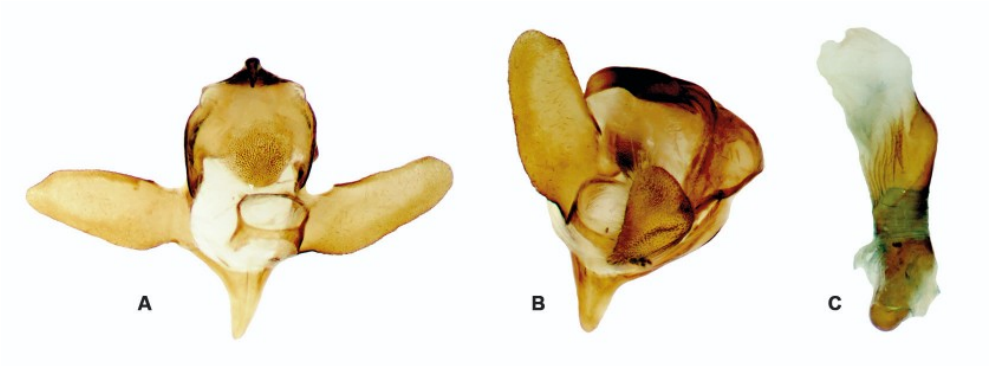

Fig. 2. — *Ctenuchidia keegani* n. sp., genitalia, holotype ♂. – **a**, ventral view. – **b**, lateral view. – **c**, aedeagus.

Discussion

The habitus of *Ctenuchidia keegani* **n. sp.** is characteristic of the genus with an iridescent blue colouration of the hindwings associated with brown forewings decorated with more or less pronounced white punctuations. This genus, endemic to the Greater Antilles, was named by Grote in 1866 for the species *Ctenucha virgo* Herrich-Schäffer, [1855], in reference to the species *Ctenucha virginica* and *Ctenucha cressonana* considered morphologically close by this author. However, despite its name which suggests belonging to the subtribe Ctenuchina, the genus *Ctenuchidia* does indeed belong to the subtribe Pericopina. Moraes & *al.* (2021), who published the most complete analysis on the phylogeny of this group, unambiguously demonstrate its belonging to this subtribe with the closest genus being *Pseudophaloe* Hering, 1925.

Ctenuchidia keegani **n. sp** is easily distinguished from *Ctenuchidia virgo* (Herrich-Schäffer, [1855]), described from Cuba, by the absence of punctuations on the hindwings and a reddish abdominal tip. *Ctenuchidia fulvibasis* Hering, 1925, described from Jamaica, *Ctenuchidia subcynea* (Walker, 1854), described from the island of Hispaniola, *Ctenuchidia interrupta* Hering, 1925, described from Dominica, and *Ctenuchidia agrius* (Fabricius, [1781]), erroneously described from Suriname, are distinguished from the new species by the absence of punctuations in the basal and median areas of the hindwings. *Ctenuchidia virginalis* Forbes, 1930, described from Puerto Rico, is distinguished by an orange abdominal tip with a black median line associated with an absence of white punctuations in the basal area of the hindwings. The latter is the only species for which a COI sequence was available to allow a comparison with the holotype sequence. It turns out that the sequences diverge by 1.8 %. Finally, a comparison of the male genitalia was possible with a specimen of *C. subcynea*, the only other species of the genus known from the Dominican Republic. The genitalia differ by a bilobed tegumen and a short uncus in the latter.

Crocomela koppi n. sp.

< https://zoobank.org/NomenclaturalActs/0D112E8E-C77D-42AB-8E2A-F37B3D13F925 >

Holotype. ♂, Pérou, San Martin, Route de Pedro Ruiz à Moyobamba, km 77 [-5.665 -77.7563], 2 000 m, 23-IX-2003, B. Vincent *leg.*, sequenced process ID ARCTC638-10, BOLD ID BEVI 1185; dissected Gen. BV 725. Will be deposited *in* MNHN.

Paratypes. 2 ♂

2 ♂, Peru, San Martin, Jorge Chavez, 1 300 m, mai-[20]05. *In* DKC.

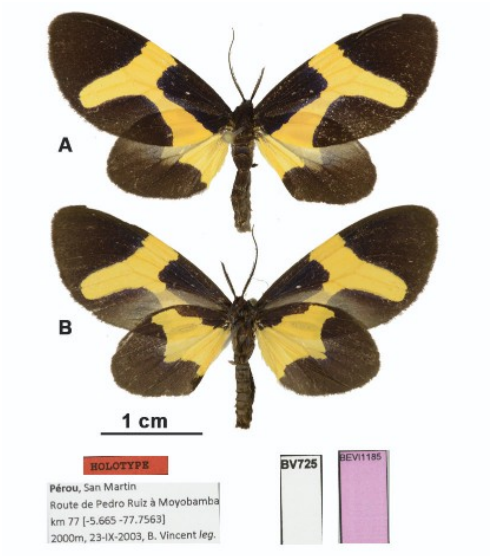

Fig. 3. — *Crocomela koppi* **n. sp.**, habitus, holotype ♂. – **a**, dorsal view. – **b**, ventral view.

Description (fig. 3). Wingspan: 38 mm.

Head. Palpi brown. Frons and vertex brown with iridescent blue reflections. Antennae entirely brown except for the scapes with iridescent blue reflections on the ventral side and the flagelomers bearing white bristles on their ventral side. Collar brown.

Thorax. Dorsal surface brown with iridescent blue reflections. Tegulae entirely brown. Ventral surface brown with iridescent blue reflections. Legs entirely brown.

Forewings. Dorsal surface black, decorated with a wide bright yellow median band that does not reach the edge and extends towards the inner margin. The whole evokes a capital T. The edges of this ornamentation are highlighted by an iridescent blue colouration that is superimposed on the black basic colour of the wing. Fringe concolourous.

Ventral surface identical except for the extension of the median band towards the inner margin which bright yellow coloration is strongly faded. Similarly, the discal area of the wing is grayish and not black. Finally, the iridescent blue colouration that frames the band is more intense and covers the basal half of the costal margin.

Hindwings. Dorsal surface black except for a wide bright yellow band that almost covers the entire basal half of the wing. In flight position, this band is a continuation of the extension of the median band of the forewing, thus increasing the base of the T. Fringe black.

Ventral surface black largely covered by the bright yellow band which appears irregular. An iridescent blue colouration frames this bright yellow band. Fringe concolourous except for the area of the anal border in contact with the band, which is bright yellow.

Abdomen. Dorsal surface brown covered by a slight iridescent blue colouration. Ventral surface brown with a slight iridescent blue colouration in its basal half.

Female. Unknown.

Male genitalia (fig. 4). Uncus, thin, elongated, marked by a slight carina on its dorsal surface, narrowed at its end. Apex with a sclerotized tip. Base widened on the sides by two rounded swellings. In dorsal view, the anterior margin of the tegumen with two small concave depressions on either side of the point of insertion with the uncus. Valvae with a thin, very elongated, arched cucullus, reaching the apex of the uncus. Sacculus individualized in the form of a short rounded protuberance. Sacculus process digitiform as long as the sacculus. Valvula very long, thin. Its rounded apical end reaches the apical third of the cucullus. Saccus with two parallel lateral projections with rounded ends. In dorsal view, the right valvais longer than the left. Juxta trapezoidal. Aedeagusstraight, fairly wide. Vesica not devaginated bearing anareaof cornuti visible by transparency.

Fig. 4. — *Crocomela koppi* **n. sp.**, genitalia, holotype ♂. – **a**, ventral view. – **b**, aedeagus.

Distribution. A photograph of a specimen observed on February 21, 2017, near the type locality, was posted on the *iNaturalist* website by Rich Hoyer (see *iNaturalist* observation #247796196). The localities of the paratype specimens are particularly imprecise. Patrick Blandin specifies that Jorge Chavez is a village created on the road that crosses the Alto Mayo protection forest, in which the type locality is located. (https://www.patrickblandin.com/types/carnets/).

Etymology. *Crocomela koppi* n. sp. is named in honour of Denis Kopp who has managed to put together a very interesting collection of Pericopina.

Crocomela flavoryza n. sp.

< https://zoobank.org/NomenclaturalActs/8CCA96E8-B025-4E3B-9F62-E23CB456952E >

Holotype. ♂, Peru, Carpéche pass [Carpish pass], mars-[20]03; dissected Gen. BV 726. *In* DKC.

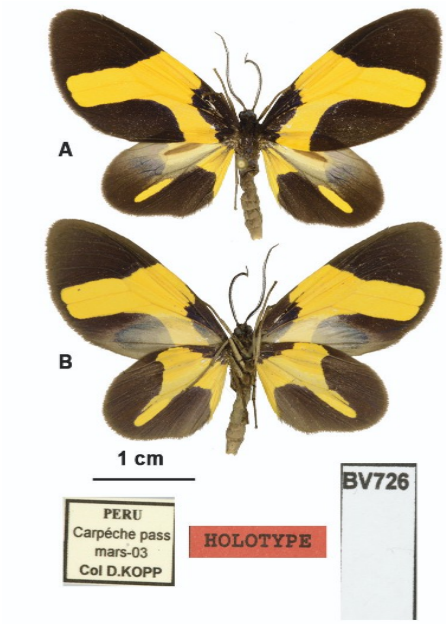

Fig. 3. — *Crocomela flavoryza* n. sp., habitus, holotype ♂. – **a**, dorsal view. – **b**, ventral view.

Description (fig. 5). Wingspan: 38 mm.

Same as *C. koppi* **n. sp.** except for the following characters:

Dorsal surface of the forewings with the bright yellow median band wider. The extension towards the inner margin is eccentric. The whole evokes an almost inverted L and not a capital T. Dorsal surface of the hindwings with the bright yellow band that covers almost the entire basal half of the wing almost extending along the entire anal border. Presence of a bright yellow band in the shape of a grain of rice, between the Cub1–Cub2 venation in the median and post-median areas of the wing. Androconia, above the cell, formed by a light brown area in the shape of a grain of rice, surrounded by a whitish colouration. End of the cell highlighted by a purplish-blue colouration.

Male genitalia (fig. 6) diverge by the presence of an uncus with the dorsal face of its apical end split in two, ending in a tiny sclerotized tip. Saccus with longer parallel lateral projections with spatulate ends.

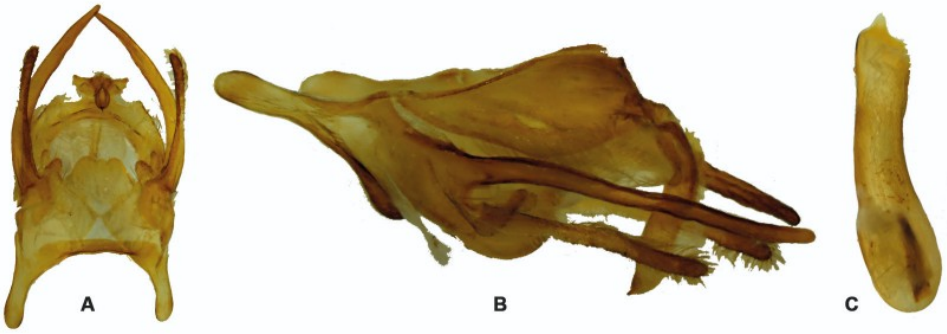

Fig. 6. — *Crocomela flavoryza* **n. sp.**, genitalia, holotype ♂. – **a**, ventral view. – **b**, lateral view. – **c**, aedeagus.

Female. Unknown.

Distribution. *« Carpéche pass »* could correspond to Paso Carpish, a famous high-altitude locality near Chinchao in the province of Huanuco.

Etymology. From Latin flavus, "*yellow*", and latinized Greek ŏryza [ὄρύζα], "[*grain of*] *rice*" with reference to the yellow spot in the shape of a grain of rice on the hind wings.

Discussion. The androconia, visible on the hindwings of *C. flavoryza* **n. sp.** are also present on those of *C. koppi* **n. sp.** but are hidden by the forewings. These pheromone-emitting scales are rare in Pericopina. The genus *Crocomela* Kirby, 1892 is one of the few that groups several species with this character. Combined with an iridescent blue colouration on the head, thorax and abdomen as well as an ornamentation of the forewings presenting yellow bands, the placement of the two new species in this genus was obvious. We can cite *Crocomela flammifera* (Warren, 1904) as a relatively close species which COI sequence diverges by 2.4 % from that of *C. koppi* **n. sp.** However, the closest species is classified in the genus *Heliactinidia* Hampson, 1901. It is *Heliactinidia caerulescens* Hampson, 1901, described from Bogotá, Colombia (fig 7). According to Lamas (2017) this locality is an error and the species "appears to belong in *Crocomela* rather than in *Heliactinidia*", hypotheses that we share. It diverges with a wingspan of 44 mm. The bright yellow median band that does not reach the edge gradually narrows into a point and is interrupted by the submarginal area. The wide bright yellow band of the hindwings covers almost the entire basal half and extends along the Cub1 vein without reaching the submarginal area. We therefore propose the following recombination:

Heliactinidia caerulescens Hampson, 1901 =
Crocomela caerulescens (Hampson, 1901**) comb. n.**

Fig. 7. — *Crocomela caerulescens* habitus, holotype ♂, dorsal view.

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